

PowerForward

Ohio

Public Utilities
Commission

*A Roadmap to Ohio's Electricity
Future*

EXHIBIT 3

PowerForward



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Commission

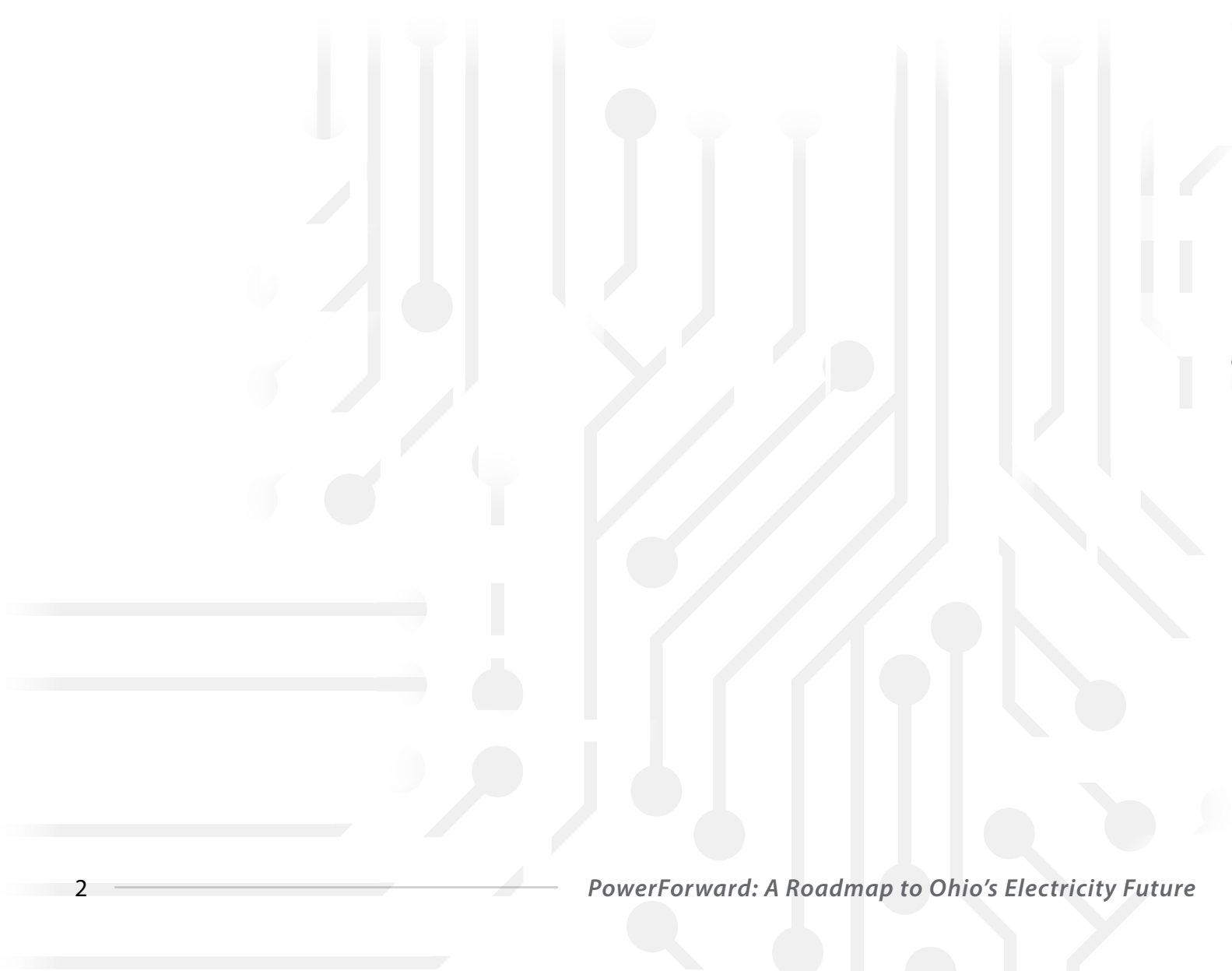
“Ohio is known as the nation’s test market, a reputation generally reserved for restaurants and grocery stores. But it’s also a **proving ground for energy policy.”** COLUMBUS BUSINESS FIRST

“Still, the **open forum and welcoming of diverse, innovative ideas puts Ohio on the leading edge of states striving to achieve the ‘utility of the future.’”** FORBES

“Through their work so far, the PUCO has shown the value in bringing stakeholders to the table and in establishing an end-vision for **transforming Ohio’s electricity system.”**

ADVANCED ENERGY ECONOMY

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A Roadmap to Ohio's Electricity Future

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Executive summary and acknowledgements

Electric utility regulation in the state of Ohio has undergone a dramatic shift over the past two decades. Historically, the Public Utilities Commission of Ohio (PUCO) has been a body that regulated both electric generation and distribution service in the state. After close to two decades of transition, Ohio is a “restructured” state, and the bones of both the wholesale and retail generation markets have been formed. Each of our four electric distribution utilities (EDUs) has taken measures to divest its affiliate-owned generating units, and without future action from our General Assembly, the PUCO is, broadly speaking, out of the generation business.

The PUCO has shifted its focus to the distribution system and, specifically, how the distribution system can be improved through innovation to better the lives of Ohioans. Hence, PowerForward. PowerForward is the PUCO’s grid modernization endeavor built upon the pairing of two pillars: (i) innovation; and the concept that this innovation should serve to (ii) enhance the customer electricity experience. The PUCO is not interested in innovation simply for the sake of exploring the wonderment of

new things. It is interested only in innovation that will enhance the electricity experience for customers.

PowerForward consisted of three phases. Summaries of the phases are set forth in this document. These phases were designed to lead the state through a very linear discussion of the concept of grid modernization. We began with the business case for pursuing grid modernization, then conducted a deep dive into the engineering of the grid, and then went on to discuss the elements that would create the modern grid along with the ratemaking/rate design that would best accompany this evolution.

In total, the PUCO hosted **127** speakers and received approximately **100** hours of education through the three phases of PowerForward. This, in and of itself, is a victory for the PUCO and the state. Commissioners and staff were deeply engaged every hour of the three phases, and the knowledge bank that has now been developed at this agency and archived on the PUCO website for public consumption has value that is incalculable. We are forever grateful to our speakers, many of whom traveled from across the country, for their willingness

to educate the Commission and staff without promise of a particular outcome. Our hope is that this document does justice to their goodwill.

This roadmap will serve not only to summarize what we learned, but it will set forth certain policy positions, outline principles and objectives, and express a vision to allow the state to pursue grid modernization responsibly.



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The PowerForward Roadmap:

Creates a regulatory paradigm that will allow for innovation to reach all customers cost effectively while maintaining the delivery of safe and reliable power.

Envisions the distribution grid as a secure and open access platform that allows for customer applications to interface seamlessly with it.

Continues through the PowerForward Collaborative and associated work groups to monitor the marketplace and present recommendations to the Commission on evolving issues like electric vehicle charging stations, battery storage, distribution system planning and data access.

Informs future utility regulatory filings and proceedings in order for electric distribution utilities to advance in grid modernization initiatives.

It is important to acknowledge that our efforts thus far through PowerForward are just the start of a many decades long conversation about the future of electric distribution utility service for Ohioans. Innovation, both as a concept and in practical application, is evolutionary in nature. Very simply, we don't know what we don't know.

At the same time, there are some initial consensus investments that can be made, market

parameters that can inform investment, and general guidance that can be provided to our stakeholders to make the evaluation of grid modernization applications easier. We address these topics, and many others, in this document.

It is also important to acknowledge that the Commission fully understands its role in this space. We are not trying to create, manufacture and distribute, for example, the iPhone. We are trying to create the regulatory environment that will allow for the electric grid's version of the iPhone to be deployed seamlessly and cost-effectively to customers.

This roadmap is informed by the national expertise provided to us at PowerForward, but that information was run through an Ohio filter. This document represents what we believe to be the right path for Ohio. No final decisions are made in this document;¹ and again, we understand that grid modernization will be an iterative experience. As such, the Commission's opinion on any item discussed in this document could change. This document is not binding on this Commission, or any future Commission. The Commission will consider further action in appropriate dockets. This is, however, a very well educated start. To ensure that we are evolving along with the industry, this roadmap envisions the creation of a PowerForward Collaborative along with a few specifically tailored work groups.

I would be remiss if I didn't acknowledge the work of my fellow commissioners along with the staff in advancing PowerForward. Vice-Chair Beth Trombold led our internal planning team, and PowerForward would not have been a success were it not for her diligence in ensuring that the phases were carefully planned and seamlessly executed. Commissioners Tom Johnson, Larry Friedeman, and Dan Conway are thought-leaders in this state who brought to PowerForward their varied and deep individual experiences. I am grateful for the commissioners' willingness to take this journey, and to so essentially contribute to its success.

¹ The Commission issues this policy document to provide guidance to interested stakeholders regarding the future of grid modernization in this state. Although this document represents the Commission's vision for grid modernization and outlines a process for moving forward, nothing in this policy document should be construed as binding upon the Commission in any future case before the Commission. Rather, any future decisions on grid modernization will be based upon the specific facts and circumstances in each case after all interested stakeholders have had a full and fair opportunity to participate.

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I promoted Krystina Schaefer, Chief of Grid Modernization and Security, into her role just a few years ago and she has exceeded every expectation. Kristin Clingan worked tirelessly to ensure PowerForward's success. Chief Analyst Howard Petricoff contributed to PowerForward, but were it not for his brilliance representing staff in our challenging case work, we would not have had the time, nor the bandwidth to launch and execute this endeavor. Many of our technical staff contributed to Howard's efforts as well, performing their day jobs with excellence so others could devote time to PowerForward. Our public affairs and media team operated exceptionally in promoting PowerForward, making it look very professional and making it accessible to our *millions* of followers. Our legal team provided thoughtful advice, our technical staff's knowledge was on display as either questioner or

presenter, and our commission aides hustled from one task to the next ... it was truly a team effort. I could not be more proud of them and of this agency.

And with this as our backdrop, we move the state forward—from a systematic regulatory paradigm of the past, through the challenging waters of deregulation, and now into a very bright future where we embrace innovation and change for the betterment of Ohioans. It is bold. But it is also our duty.

Very truly yours,



Chairman Asim Z. Haque
August 29, 2018

Glossary of Terms

ADMS	Advanced distribution management system	kWh	Kilowatt hour
AMI	Advanced metering infrastructure	MRO	Market rate offer
CAIDI	Customer average interruption duration index	NARUC	National Association of Regulatory Utility Commissioners
CEUD	Customer energy usage data	NIST	National Institute of Standards and Technology
CHP	Combined heat and power	NSPL	Network service peak load
CRES	Competitive retail electric service	NWA	Non-wires alternative
CVR	Conservation voltage reduction	OMS	Operation management system
DACR	Distribution automation circuit reconfiguration	PBR	Performance based ratemaking
DC	Direct current	PDR	Peak demand reduction
DER	Distributed energy resource	PLC	Peak load contribution
DERMS	Distributed energy resource management system	PUCO	Public Utilities Commission of Ohio
DG	Distributed generation	PV	Photovoltaic
DR	Demand response	PWG	Distribution System Planning Workgroup
DRMS	Demand response management system	RAP	Regulatory Assistance Project
DWG	Data and the Modern Grid Workgroup	RPC	Revenue per customer
EDI	Electronic data interchange	SAIDI	System average interruption duration index
EDU	Electric distribution utility	SAIFI	System average interruption frequency index
EE	Energy efficiency	SCADA	Supervisory control and data acquisition
ESP	Electric security plan	SFV	Straight fixed/variable
EV	Electric vehicle	SSO	Standard service offer
FERC	Federal Energy Regulatory Commission	THEO	Total hourly energy obligation
HAN	Home area network	TOU	Time of use
HCA	Hosting capacity analyses	U.S. DOE	U.S. Department of Energy
IDP	Integrated distribution planning	VAR	Volt-ampere reactive
IDR	Interval data recorder	VVC	Volt/VAR control
IT/OT	Information technology and operational technology	VVO	Volt/VAR optimization

Principles

Foundational tenets to guide PUCO grid modernization decisions

Do No Harm

Maintain the delivery of safe, reliable electric service at fair prices while the industry advances in grid modernization.

Provide Net Value to Customers

Insist that EDUs spend ratepayer dollars wisely and in a manner that delivers eventual net value to the customer.

Create an Environment that Fosters Innovation

Support and develop opportunities within the stakeholder community and at the PUCO that fosters innovation in technology and regulation.

Enhance the Experience for All

Ensure that investments and the environment fostered create societal benefit and allow for an enhanced customer electricity experience accessible to all customers.

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Objectives

Desired outcomes from PUCO grid modernization decisions

A Strong Grid

A distribution grid that is reliable and resilient, optimized and efficient and planned in a manner that recognizes the necessity of a changing architectural paradigm.

The Grid as a Platform

A modern grid that serves as a secure open access platform—firm in concept and as uniform across our utilities as possible—that allows for varied and constantly evolving applications to seamlessly interface with the platform.

A Robust Marketplace

A marketplace that allows for innovative products and services to arise organically and be delivered seamlessly to customers by the entities of their choosing.

The Customer's Way

An enhanced experience of the customer's choosing on the application side, whether for reasons arising from financial, convenience, control, environmental or any other chosen consideration.